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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/990,964

11/21/2001

Andrew Roman Chraplyvy

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3319

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01/24/2005

Docket Administrator (Room 3J-219)

Lucent Technologies Inc.

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EXAMINER

LEE, DAVID J

ART UNIT

PAPER NUMBER

2633

DATE MAILED: 01/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/990,964

Applicant(s)

CHRAPLYVY ET AL.

Examiner

David Lee

Art Unit

2633

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>06/02/03, 02/27/02</u> | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 7-10, and 14-18 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Suzuki et al (US Patent No. 6,005,702).

Regarding claims 1 and 16, Suzuki teaches an optical communication system arranged to transmit input data from a transmitter (fig. 1 – 1) to a remote receiver (fig. 1-11), said system comprising means for encoding said input data by modulating the phase (fig. 6 – 33A) of a RZ carrier in accordance with said input data (fig. 6 – 31A), and means for transmitting said phase modulated RZ carrier from said transmitter to said receiver via a dispersion managed optical transmission medium (fig. 6 – 39, 43).

Regarding claims 2 and 17, Suzuki teaches an optical communication system comprising means for generating an RZ carrier signal (fig. 6 – 31A), means for modulating the phase of said RZ carrier signal (fig. 6 – 33A) in accordance with an input data stream, and means for applying the phase modulated signal generated by said modulating means to a dispersion managed optical transmission link (fig. 6 – 39).

Regarding claims 3 and 18, Suzuki teaches an arrangement for transmitting digital data from an originating location to a remote destination, comprising a modulator for modulating the phase of an RZ carrier in accordance with said digital data (fig. 6 –

Art Unit: 2633

33A, and col. 2, lines 36-39); and means for transmitting the output of said modulator from said originating location to said remote destination via a dispersion managed optical transmission medium (fig. 6 – 39).

Regarding claim 7, Suzuki teaches that the dispersion managed optical transmission medium is a long haul transmission medium (col. 1, lines 23-25) adapted for the transmission of solitons (col. 1, lines 27-30).

Regarding claim 8, Suzuki teaches that the dispersion managed optical transmission medium is arranged to use quasi-linear transmission with very short (compared to the bit period) pulses that disperse very quickly as they propagate along said transmission medium (col. 4, lines 19-27).

Regarding claim 9, Suzuki teaches that the RZ carrier has a first wavelength (col. 6, line 2: 1558.7 nm), and wherein said arrangement further includes a wavelength division multiplexer (col. 6, lines 14-15) arranged to combine the output of said modulator with other phase modulated signals having RZ carriers with different wavelengths (col. 6, line 4: 1559.7 nm).

Regarding claim 10, Suzuki teaches that the modulator is a LiNbO₃ phase modulator (col. 3, lines 64-65).

Regarding claim 14, Suzuki teaches means for amplifying the optical signal (fig. 6 – 37) output from said transmission means to compensate for losses occurring in said optical transmission medium (col. 2, lines 46-48).

Regarding claim 15, Suzuki teaches that the amplifying means includes discrete or distributed EDFA (col. 4, lines 31-35).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki in view of Tzukerman et al (US Patent No. 6,724,829).

Regarding claim 6, Suzuki discloses all the limitations as applied to claim 3 above except for the limitation that the modulator is a QPSK modulator. Tzukerman discloses a QPSK modulator (fig. 3 – 314, and col. 4, lines 56-57). It would have been obvious to one of ordinary skill in the art to incorporate a QPSK modulator in the system of Suzuki because QPSK modulation has the advantages of high spectral efficiency and low bit error rate (col. 4, lines 56-61). Also, both the in-phase and the quadrature portions of the carrier signal can be modulated and combined to form the QPSK signal. Therefore, one of ordinary skill in the art at the time of invention would have been motivated to use the QPSK modulation technique as indicated by Tzukerman in the system of Suzuki.

5. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al in view of Fukuchi et al (5,745,613).

Regarding claim 11, Suzuki discloses all the limitations as applied to claim 3 above except for the limitation that the modulator is a LiNbO₃ Mach-Zehnder phase modulator. Fukuchi, from the same field of endeavor, discloses a LiNbO₃ Mach-Zehnder phase modulator (col. 6, lines 31-34). It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate the LiNbO₃ Mach-Zehnder modulator in the system of Suzuki because Mach-Zehnder modulators have the advantage that the chirp may be adjusted to the bit rate and the transmission distance (col. 6, lines 34-36), therefore one of ordinary skill in the art at the time of invention would have been motivated to use the Mach-Zehnder modulator as indicated by Fukuchi in the system of Suzuki.

6. Claims 4, 5, 12, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki in view of Smith (US Patent No. 4,847,477).

Regarding claims 4 and 5, Suzuki teaches all the limitations as applied to claim 3, but does not expressly disclose the limitation that the modulator is a PSK or DPSK modulator. Smith discloses the use of PSK and DPSK modulation schemes (col. 1, lines 12-14). It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate a PSK or DPSK modulator as indicated by Smith in the system of Suzuki because either type is known for its high performance (col. 1, lines 12-14), therefore, one of ordinary skill would have been motivated to use a DPSK or PSK modulator as indicated by Smith in the system of Suzuki.

Regarding claims 12 and 13, Suzuki teaches all the limitations as applied to claim 3 except for the limitation that the remote location includes a delay demodulator and a balanced receiver for recovering said input data from said phase modulated signal. Smith teaches a delay demodulator (fig. 3 – 18, and col. 4, line 21) and a balanced receiver for recovering said input data from said phase modulated signal (fig. 3 – 15, 25, and 22). It would have been obvious to one of ordinary skill in the art to include these components of Smith in the remote location of Suzuki because balanced receivers eliminate relative intensity noise, canceling the intensity components of a laser, and delay demodulators delay signals so as to evaluate and combine into the output signal. Therefore, it would have been obvious to include the balanced receiver and delay modulator of Smith in the system of Suzuki.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ogawa et al (US Patent No. 4,291,408) discloses a system incorporating DPSK

Cotter (US Patent No. 4,560,246) discloses a laser with a PSK modulator

Pirio et al (US Patent No. 5,343,322) discloses a long transmission optical fiber

Korotky et al (US Patent No. 5,477,375) discloses an optical soliton generator

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Lee whose telephone number is (571) 272-2220. The examiner can normally be reached on Monday - Friday, 9:00 am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

David Lee



JASON CHAN
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